

U.S.S.N. 10/699,228  
Attorney Docket No.: 2002-0048-02

IN THE CLAIMS:

1. (original) A method for testing etalons comprising the steps of:
  - A. mounting an etalon defining a test etalon on a stage,
  - B. illuminating said test etalon with a collimated laser beam,
  - C. detecting interference fringes in light reflected from the test etalon at a plurality of etalon rotation positions sufficient to include at least one extinction cycle,
  - D. analyzing selected interference patterns to estimate uniformity of etalon spacing.
2. (original) A method as in Claim 1 wherein said collimated beam is configured to illuminate said test etalon at angles in the range of about 3.5 degrees.
3. (previously presented) A method as in Claim 1 wherein said collimated beam has a spherical wavefront error of less than  $23\mu\text{R}$ .
4. (original) A method as in Claim 1 wherein said collimated beam has a wavefront error of less than  $\lambda/10$ .
5. (original) A method as in Claim 1 wherein said fringes are detected by imaging fringes on a screen.
6. (previously presented) A method as in Claim 5 wherein images on said screen are detected with a CCD camera.
7. (original) A method as in Claim 1 wherein said fringes are imaged directly on pixels of a CCD camera.

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8. (original) A method as in Claim 1 wherein said test etalon is stepped through a plurality of angles and interference patterns are recorded at each of said plurality of angles using a controller comprising a digital processor programmed to keep track of pattern data and rotation angles.

9. (original) A method as in Claim 8 wherein said etalon is stepped through at least two extension cycles.

10. (canceled) A system for testing etalons comprising:

- A. a rotational stage,
- B. a mounting means for mounting a test etalon on said rotational stage,
- C. a laser light source for producing a coherent light source,
- D. collimating optics for collimating said light source to produce a collimated beam for illuminating said test etalon,
- E. a detector for detecting interference patterns in light reflected from said test etalon.

11. (canceled) A system as in Claim 10 and further comprising a control means to provide precision rotation of said test etalon on said rotation stage and for recording said interference patterns at each of a plurality of rotation positions.

12. (currently amended) A system ~~as in Claim 11~~ for testing etalons comprising:

- A. a rotational stage,
- B. a mounting means for mounting a test etalon on said rotational stage,
- C. a laser light source for producing a coherent light source,
- D. collimating optics for collimating said light source to produce a collimated beam for illuminating said test etalon,
- E. a detector for detecting interference patterns in light reflected from said test etalon,
- F. a control means to provide precision rotation of said test etalon on said rotation stage and for recording said interference patterns at each of a plurality of

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rotation positions, wherein said control means comprises a digital processor for analyzing said interference patterns to indicate extent of uniformity of etalon spacing.